to be able to locate the center of the hot spot within 0.3 microns.

CLAIMS

What I claim as new and desire to secure by Letters Patent of the United States are:

1. A radiative heatig system for adjusting the temperature of the liquid crystal film on the surface of the die of an integrated circuit, which the said radiative heating system comprises:

one or more power supplies;

one or more light bulb type of heating filaments; each is connected to one of the said power supplies, each of the said heating filaments has a co-planar filament;

an optical lens for each of the said heating filaments;

means for collimating the heat radiation from each of the said heating filaments;

means for directing the said heat radiation to heat up the said liquid crystal film from the top surface of the said liquid crystal film;

a digital voltmeter for each said power supply; means for measuring the output power of each of the said power supplies;

an on/off switch for each of the said power supply; means for turning on or turning off the said power supply; and

a variable power level controller; means for varying the output power of the said heating filaments;

the said heating filaments are arranged symmetrically around the vertical axis of the said die whenever more than one filament

CM I claim:

is used, and each of the directions of the said heat radiations is making approximately 45 degree angle with the said vertical axis.

7. A method of controlling the temperature of the liquid crystal film on the die of an integrated circuit subjected to a hot spot detection test, which comprises:

step 1; adjusting the setting of the variable power level controller of a said power supply to a power level;

such that the temperature of the said liquid crystal film would be heated to beyond one of the phase transition temperatures of the said liquid crystal film;

such that the said temperature of the said liquid crystal film would be increasing very slowly at the temperature just below the said phase transition temperature;

such that the temperature of the said liguid crystal film is brought within an arbitrary small temperature range just below a said phase transition temperature for a limited length of time; and;

step 2; adjusting the setting of the said variable power level controller until the said limited length of time is long enough;

such that the periodic phase transition process of the said liquid crystal film is slow enough for human to detect the periodic phase transitions.

8. A method of controlling the temperature of an object to an arbitrary close to a specified temperature range for a limited length of time; which comprises:

adjusting the heating up rate of the said object with a

sufficient amount of energy;

such that the temperature of the said object would be within the said temperature range for a said limited length of time ; and

such that the said limited length of time met a required length of mission time.

4. A process of identifying a hot spot in a liquid crystal hot spot detection test; which comprises:

step 1; spreading

4 CYANO-4' HEXYL-BIPHENYL, trade name is K-18 nematic liquid crystal; or

4 CYANO-4' PENTYL-BIPHENYL, trade name is K-15 nematic liquid crystal; or

4 CYANO-4' HEPTYL-BIPHENYL, trade name is K-21 nematic liquid crystal; or

4 CYANO-4' OCTYL-BIPHENYL, trade name is K-24 nematic liquid crystal; or

4 CYANO-4' NONYL-BIPHENYL, trade name is K-27 nematic liquid crystal; or

4 CYANO-4' DECYL-BIPHENYL, trade name is K-30 nematic liquid crystal; or

4 CYANO-4' UNDERDECYL-BIPHENYL, trade name is K-33 nematic liquid crystal; or

4 CYANO-4' DODECYL-BIPHENYL, trade name is K-36 nematic liquid crystaL; onto the surface of a die or a wafer to form a thin layer of liquid crystal film;

step 2; conducting a said liquid crystal hot spot detection test with a pulsing input to the said die or the said wafer;